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वायवीय सिलिंडर — स्वीकार्यता परीक्षण

Indian Standard

PNEUMATIC CYLINDERS — ACCEPTANCE TEST

UDC 621.642. 17-85: 620.16

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110 002

June 1994

Price Group 1

Pneumatic Fluid Power Systems Sectional Committee, PE 16

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Pneumatic Fluid Power Systems Sectional Committee had been approved by the Production Engineering Division Council.

In pneumatic fluid power system, power is transmitted and controlled through air under pressure within a circuit. One component of such system is the pneumatic fluid power cylinder. This is a device that converts power into linear mechanical force and motion. It consists of a movable element that is a piston and piston rod, operating within a cylinder bore.

In preparation of this standard considerable assistance has been drawn from ISO 10099 : 1990 'Pneumatic Cylinders — Accptance Test', issued by International Organization for Standardization (ISO).

Indian Standard

PNEUMATIC CYLINDERS — ACCEPTANCE TEST

1 SCOPE

This standard specifies acceptance and functional tests for pneumatic cylinders manufactured in accordance with the following Indian Standards:

IS 10143 : 1982 Mounting dimensions for pneumatic fluid power cylinders, single rod detachable mounting 10 bar series, 32 mm to 320 mm

IS 12723 : 1988 Pneumatic fluid power — Single rod cylinder — 1 000 kpa (10 bar) series — Bores from 8 to 25 mm — Mounting dimensions

IS 12738 : 1988 Pneumatic fluid power — Single rod cylinders with integral mountings -10 bar (1 000 kpa) series — Bores from 32 to 250 mm — Mounting dimensions

2 REFERENCE

IS 10416:1992 'Fluid power systems and components — vocabulary (*first revision*)' is necessary adjunct to this standard.

3 DEFINITIONS

For the purpose of this standard, the definitions given in IS 10416 : 1992 shall apply.

4 IDENTITY CHECK

Record the following information about the cylinder to be tested :

a) Type
b) Bore
c) Piston rod diameter
d) Piston rod thread dimension
e) Stroke length
f) Port dimensions
g) Model label
h) Overall length
j) Mounting dimensions

5 FUNCTIONAL TEST AT MANUFACTURER'S SPECIFIED MINIMUM OPERATING PRESSURE

With the cushion adjusting screw, if any, fully open, the cylinders shall be cycled at the manufacturer's specified minimum operating pressure. Breakaway and full stroke movement shall occur in both directions and the rod shall extend and retract smoothly.

6 LEAKAGE TEST AT 1 BAR (100 kPa) AND 10 BAR (1 000 kPa)

6.1 Apply air to rear port. Check for leakage as per manufacturer's declaration; from:

a) Front port
b) Joint between rear end cap and tube and around check valve, if any
c) Around rear cushion adjusting screw
d) Porosity in rear end cap
e) Any other external joints

6.2 Apply air to front port. Check for leakage as per manufacturer's declaration; from:

a) Rear port
b) Joint between front end cap and tube
c) Around front cushion adjusting screws and around check valve (if any)
d) Around piston rod seal
e) Joint between front end cap and bearing
f) Porosity in front end cap
g) Any other external joints

6.3 If special requirements for leakage are specified by customers, the amount of leakage and test method shall be as agreed between customer and manufacturer.

7 CUSHIONING TEST AT 6·3 BAR (applicable to cushioned cylinders)

Adjust the cusion screw, if any, and cycle the cylinder at the above pressure. The piston rod shall be effectively retarded before it reaches the end of stroke in both directions.

8 TEST FOR INTEGRITY

The pneumatic cylinder shall be subjected to a pressure of 1·5 times the rated pressure for a duration of one minute and checked for integrity (structural failure). This test shall be carried out at the end positions of the piston rod.